

# Carnegie Perspectives

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A different way to think about teaching and learning

Encouragement, not gender, key to success in science

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**Abstract:** A call for a more "constructive discourse" around the problem of women and girls under-represented in the sciences.

**Essay:**

Harvard President Lawrence Summers' suggestion that women are innately less qualified than men to succeed in math and science careers has raised an outcry not only among women, but also among the nature versus nurture set. Surely, shifting from the debate about women's abilities to a constructive discourse about educating women to be leaders in their chosen fields—especially in areas like the sciences and engineering—is long overdue.

Summers' remarks have fanned the flames about women's capabilities—whether they have the right stuff to succeed—not only in gray matter, but also in ambition, stamina and priorities. For centuries, this debate has challenged women's capacity for success. Are women born with the intelligence to succeed? That question has already been answered: Yes. So let's move on.

With an economy increasingly based on technology, and our future defined by science, we must maximize the talents of all. Women and girls bring unique perspectives, experiences and strengths to bear on the challenges our society faces.

We have made progress. In the 1970s, girls comprised approximately 25 percent of the Science Talent Search national finalists, and in 1999, they constituted 45 percent. In 1999, 2000 and 2001, girls took top honors in the Intel Science Talent Search.

But we still have far to go. Unlike men, women in science and math face a series of barriers in their careers. Women drop out of the sciences at almost every significant transition: after high school, after their freshman year in college, between undergraduate and graduate school and between graduate school and work. Too many women in the pipeline leave before they have the chance to prove their worth.

Women who continue on the path face the ubiquitous glass ceiling, as a 2001 report from the National Council for Research on Women, [\*Balancing the Equation\*](#), demonstrates. In academia, discrimination and traditional academic practices inhibit women's progress to the top. While the number of women science professors continues to rise, relatively few reach leadership positions. Despite the fact that women have been earning more than one-quarter of the Ph.D.s in science for the last 30 years, fewer than 10 percent of today's full professors in the sciences are women, according to the National Academy of Sciences. In addition, the wage gap persists; figures from the National Science Foundation show that in 2001, women working in computer and mathematical science fields earned \$72,500, compared to \$85,000 for men.

In the sciences, a seven-year study published in the *American Economic Review* found that women in the United States are twice as likely as men to leave occupations related to science and engineering to pursue careers in other fields. The study is consistent with the experiences of prominent women scientists who met at Mills College in 1994 to discuss the advancement of women in science. Their report challenged all sectors of society—industry, business, educational institutions, legislatures and government agencies—to develop strategies and practices that help, rather than hinder, girls and women from pursuing their scientific interests.

If women are dropping out of the sciences twice as fast as men, it is no wonder that politicians and industry leaders proclaim the need to hire math and science professionals from outside the United States. Before we can honestly talk about the need to outsource, we have to examine how we are keeping half the nation's talent from entering and advancing in these disciplines.

We need systemic change and a long-term commitment to advancing women in the sciences, beginning in kindergarten and continuing throughout women's careers. For instance, in elementary school, programs that provide cooperative, hands-on learning are ideal for developing and maintaining girls' interests in the sciences. Girls also benefit from cross-disciplinary programs in which courses such as computer science are related to girls' interests in subjects including health, the environment and the arts. We must invest in scientific and technological literacy, provide resources for teachers to develop their science careers, and encourage parents to promote their daughters' interests in science.

The National Science Foundation recommends that universities appoint women professors to influential committees, where they will be visible as role models, and provide mentoring to women graduate students, instructors, researchers and assistant professors early in their careers. These recommendations parallel what needs to be done

in math and science industries: promote capable women to senior decision-making positions, provide role models and offer more opportunities for learning from mentors.

College and university presidents have a wonderful opportunity to use their offices as bully pulpits to encourage women in science. So it is disappointing when the leader of a renowned academic institution expresses views that discourage half his students from confronting the existing obstacles to access and advancement. It's time to move from controversy to change. Actions supporting the success of women and girls in math and science, rather than poorly supported theories that discourage them, will enrich women's lives, as well as the nation.



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